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Midway Road Bridge Replacement Project across Butte Creek and Butte Creek Overflow

Project Fact Sheet

SUMMARY

The Department of Public Works entered into an agreement on December 16, 2010 with the California Department of Transportation (Caltrans) to complete the Midway Road Bridge Replacement Project across Butte Creek and Butte Creek Overflow, Federal Project BRLS-5912(085). This will require the construction of a new 1,404 foot long highway bridge on the Midway spanning both Butte Creek and the Butte Creek Overflow channel. The project will replace two existing bridges originally constructed in 1915 and 1918. The project will construct the new bridge on the existing alignment and will necessitate the closure of the Midway to traffic until the new bridge is complete.

Construction is scheduled to begin July 21, 2020. The contract for this project has been awarded to MCM Construction Inc. of North Highlands, CA in the amount of $19,600,643.50. The project is funded by a combination of Federal Highway Bridge Program Funds and Road Maintenance and Rehabilitation Act (RMRA Gas Tax) funds. The estimated completion date is December 31, 2021. These dates may be subject to change due to inclement weather or other factors.

EXISTING SITE CONDITIONS

This project is located on the Midway approximately 3 miles south of Durham. Two existing bridges will be replaced with a single structure. The Butte Creek Bridge (Bridge No. 12C0052) was constructed in 1915 and is a seventeen span reinforced concrete (RC) "T" beam structure on RC piers and pile column bents with RC cantilever abutments all on spread footings. A 2011 Caltrans sufficiency rating of 41.2 makes this bridge eligible for replacement. The Butte Creek Overflow Bridge (Bridge No. 12C0053) was constructed in 1918 and is a ten span RC "T" beam structure on RC piers and pile column bents with RC cantilever abutments with an unknown foundation type. A 2011 Caltrans sufficiency rating of 26.8 makes this bridge eligible for replacement. Both structures have reached the end of their service life and despite their age, do not qualify for any special historic considerations according to Caltrans.

The existing alignment of Midway Road is generally flat and straight both north and south of the project location. The alignment is generally very good with a high design speed. The exceptions to this are that the existing bridge has inadequate width for the average daily traffic (ADT) and design speed and there is substandard vertical sight distance at both of the bridge approaches. The 2017 ADT at the project location is 1,254 vehicles per day. Both bridges are narrow for the current level of vehicle traffic. Even if the

condition state and structural capacity of all structural elements were to be rehabilitated, these bridges would still be considered too narrow for the traffic volumes they carry. All traffic safety features (bridge railing, transitions, approach railing, and end treatments) on both bridges are sub-standard.

Union Pacific owns and operates a rail line which runs parallel to the east side of Midway Road. The railroad is active and approximately 17 freight trains and 2 Amtrak passenger trains per day utilize the rails and adjacent train trestle. All road and bridge work will avoid the railroad right of way with the exception of the "at grade" crossings located at each levee will need to be modified to accommodate the approach roadway required for the new bridge. There is also a petroleum utility line owned by Kinder Morgan within Union Pacific right of way. Relocating the new bridge upstream of the existing bridge and closer to the rail and petroleum lines was deemed not feasible. The Union Pacific train trestle will not be impacted or modified as part of this project.

Each of the two existing bridges are located adjacent to levees that fall under the jurisdiction of the Central Valley Flood Protection Board (CVFPB). Bridge No. 12C0052 is located adjacent to the south levee and crosses the main Butte Creek channel. Bridge No. 12C0053 is located adjacent to the north levee and crosses the Butte Creek Overflow channel. The roadway between the existing bridges is at grade and within the floodplain and becomes inundated during major storm events. In January 1997, a major storm event resulted in high flows that completely washed out the Midway and the adjacent railway thus rendering the route impassable. The new bridge will extend from levee to levee and will provide for a safe and passable crossing during major storm events.

PROPOSED PROJECT

The proposed new bridge will replace both existing structures on the current, existing alignment. It will be 1,404 feet long by approximately 37 feet wide and carry 2 twelve foot traffic lanes and 2 five foot shoulders. The bridge will be a cast-in-place post-tensioned concrete box girder composed of twelve spans arranged in two frames with an intermediate hinge. The intermediate supports are expected to be reinforced concrete columns founded on large diameter cast-in-drilled-hole (CIDH) pile shafts. CIDH pile shafts will be constructed with slurry drilling techniques. Bridge abutments will be reinforced concrete seat style abutments founded on driven piles. Impact pile driving will be required for installation for these bridge abutment piles.

The Midway will be widened to 34 feet for a length of approximately 800 feet north, and approximately 1000 feet south of the bridge. At both ends of the bridge the road surface, Asphalt Concrete pavement, will be tapered to match the existing cross section. Fill material will need to be imported to provide for a smooth vertical transition from the new bridge deck level to the existing roadway grade. The installation of the required roadway approach rail, which connects to the concrete bridge railing, will necessitate the realignment of four adjacent levee bank roadways.

Overhead and underground public utilities owned by Pacific Gas & Electric, Sprint, and AT&T located within the project limits will require temporary and permanent relocation. This relocation work is currently underway and will be completed prior to issuance of the Notice to Proceed to the Contractor. The previously mentioned Kinder Morgan petroleum pipeline, as well as an underground Fiber Optic line on the east side of the bridge within the railroad right of way will remain in place.

ENVIRONMENTAL & TECHNICAL SUMMARY

In order to participate in the Federal Highway Bridge Program and be eligible for a Federal Funding reimbursement of 88.53%, the County must follow the National Environmental Policy Act (NEPA) in addition to the California Environmental Quality Act (CEQA). This process required the preparation of a Natural Environment Study resulting in formal consultation with the United States Fish and Wildlife Service and the National Marine Fisheries Service with regards to sensitive species within the project impact area. Therefore, in addition to the mitigations and regulatory permit requirements set forth in our CEQA document that was adopted by this Board on May 23, 2017, this department also facilitated the purchase of conservation credits for the Giant Garter Snake, as well as Valley Elderberry Longhorn Beetle credits from Westervelt Ecological Services. The department must also follow additional guidelines as set forth in the "Biological Opinions" produced by these Federal Agencies with regard to the projects.

As a requirement for this project, the following permits were obtained:

California Regional Water Quality Control Board
- §401 Water Quality Certification

California Department of Fish and Wildlife (CDFW)
- §1602 Streambed Alteration Agreement
- §108 Incidental Take Permit (ITP)

California Department of Transportation
- NEPA Categorical Exclusion

Natural Resources Conservation Service (NRCS)
- NRCS §106 (Farmland Conversion Impact Rating For Corridor Type Projects)

United States Army Corps of Engineers (USACE)
- §404 Clean Water Act Permit
- §408 Concurrence Letter
- §106 National Historic Preservation Act (NHPA) Determination
- §7 Endangered Species Act (ESA) Determination
- NEPA Finding

Central Valley Flood Protection Board (CVFPB)
- Encroachment Permit

Union Pacific Railroad
- Encroachment Permit

California Environmental Quality Act (CEQA)
- Notice of Determination (NOD)
- CEQA Negative Declaration

In addition to the required permits and approvals for the project, the follow technical studies were performed:

Midway Bridge Replacement Design Hydraulic Study Report
- Presents the design flow characteristics for the existing and the proposed conditions.

Midway Bridge Replacement Location Hydraulic Study Report
- Examines and analyzes the existing base (100-year) floodplain within the project limits, documents any potential impacts to, or encroachments upon the floodplain, and recommends any mitigation that may be required.

Midway Bridge Replacement Initial Site Assessment
- Identifies recognized soil or groundwater contamination and hazardous material issues that

may affect the planned project improvements.

Midway Bridge Replacement Foundation Report and Soils Investigation

- Provides earthen materials criteria for use in design of the proposed new bridge foundations including subsurface exploration, laboratory testing, the Log of Test Borings (LOTB), and foundation recommendations for the proposed bridge.

Midway Bridge Replacement Historic Property and Archaeological Survey Report

- Identifies an Area of Potential Effects (APE) as to incorporate all ground disturbing impacts associated with construction and improvements proposed as well as identifying any prehistoric, historic, or culturally sensitive sites near or in conjunction with the project.

ALTERNATIVES AND TRAFFIC HANDLING

Initially it was anticipated that the new bridge and roadway alignment would be placed in a slight horizontal curve that would allow placement of the structure adjacent to, but slightly downstream of the existing bridges. This alignment would have allowed Midway Road to remain open with controlled traffic passing over the existing bridge during construction. Traffic would have been transferred to the new bridge prior to demolishing the two existing bridges.

However, after hearing the results of a series of public meetings held in late 2015 and early 2016 in the communities of Durham and Richvale, direction was given by Butte County Board of Supervisors on January 26, 2016 to adopt the placement of the new bridge on the existing alignment thus necessitating the closure of the Midway to traffic during construction. Benefits of this alignment provided for lessening the footprint of the project thus reducing the environmental impact and the required right of way. It is also projected that selecting this alignment saved nearly $1,000,000- from the estimated construction cost.

During construction through traffic will be detoured between the town of Nelson and Durham via Nelson Road, Aguas Frias Road, Durham-Dayton Highway, and vice versa thus adding an additional 9 miles to the trip. A shorter alternative detour via Durnel Drive was studied and ultimately abandoned because of lack of a paved asphalt surface on a significant portion of the route and the bridge on Durnel Drive crossing Butte Creek being unable to accommodate standard highway and permit traffic loading.

RIGHT OF WAY

Even though the proposed bridge and roadway alignment falls on what is existing, hydraulic requirements set forth by the USACE and CVFPB resulted in an elevated roadway profile. This coupled with the aforementioned realigned levee approaches and an additional section width required to meet current design standards combined for a larger project footprint than what is existing. This larger footprint is what necessitated the need for right of way acquisition, both temporary and permanent from the 2 adjacent land owners on the west side of the project.

Negotiations with two neighboring ranches adjacent to the project site resulted in a partnership that allowed the County to acquire 1.25 acres of permanent right of way required for the roadway fill on the north and south approach roadway. A temporary construction easement encompassing an area of 1.50 acres was also granted that will provide the contractor access along the west side of the proposed bridge for construction purposes.

CONSTRUCTION SCHEDULING

Though the project permits will allow for a construction duration of up to three seasons (May-October), the project itself and the permit work windows for this project were designed to give the contractor the best opportunity possible to complete construction within 2 full seasons. The contractor is ultimately responsible for scheduling and completing the designated work within the confines of the permit conditions. However, it is anticipated that one plausible scenario would be for the contractor to establish all the foundations and substructure components of the new bridge during the first construction season and returning during the second season to complete the bridge, or superstructure components, and roadway approaches. It is also possible that there will be enough "float", or additional time, available for the contractor to work towards completing other components of the contract. This, of course, would be contingent on several factors including but not limited to weather, workmanship and materials satisfying the contract specifications, and guidelines set forth with regards to the current COVID-19 pandemic.

FISCAL IMPACT

The project is funded through the Federal Highway Bridge Program which provides an 88.53% funding match and local funds supplementing the remaining 11.47% of the project for this phase of work.

The cost to the County for the proposed low bid award of $19,600,643.50 would be $2,248,193.81 over the life of the project. The local share of this project will be funded with Road Maintenance and Rehabilitation Act (RMRA Gas Tax) funds.

CONCLUSION

Construction of this project will be the culmination of over 10 years of work by the Public Works Department's staff, consultant partners, and Caltrans. The County has invested nearly $2.8 million in project development, design, environmental, mitigation, and right of way, of which almost $2.5 million has been reimbursed through the Federal Highway Bridge Program.